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United States
Department of
Agriculture

Economic
Research
Service

Miscellaneous
Publication
Number 1468

April 1989

GATT & AGRICULTURE

The Concepts of PSE's and CSE's

What are producer subsidy equivalents and consumer subsidy equivalents?
How do they work?
How can they help the GATT negotiations?

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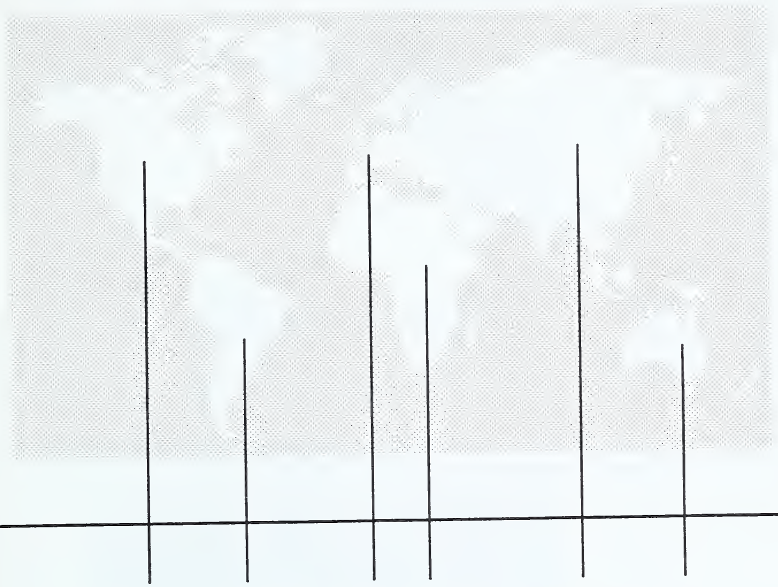
The booklet is based on materials supplied by Carl Mabbs-Zeno and others in the Economic Research Service of the U.S. Department of Agriculture. It was prepared by William J. Hudson (The ProExporter Network, Maumee, Ohio) under contract with the Economic Research Service.

GATT = General Agreement on Tariffs and Trade. The first round of GATT was in 1947, and there have been nine rounds since then.



Countries on six continents are trying to negotiate a new agreement on world trade. These negotiations, called the Uruguay Round of GATT, involve 105 nations, have already gone on for more than 2 years, and are scheduled to continue for another 2 years.

<ins>Question.</ins> Of the 15 different aspects of trade being negotiated -- ranging from health regulations and patent protection to trade in manufactured goods and agriculture -- one of the most difficult areas has become agriculture. Why is this so?

Agricultural trade policies are difficult to negotiate because of their extreme diversity, which is in turn related to wide differences in agricultural resources, including soil, climate, and technology.

The United States produces 67 million tons of wheat, of which only half is used domestically.

Japan produces less than 1 million tons of wheat, and imports another 6.

Trade in agricultural materials is vital to all 105 countries participating in the GATT negotiations, some as exporters, others as importers. Question: Do most of these countries have the same kind of domestic agricultural policies, with respect to tariffs, price supports, and other subsidies?

Every country treats every agricultural commodity differently with respect to government policies.

The U.S. Government pays American wheat producers about $4 billion every year.

Japan, with less than 2 percent as much wheat production as the United States, pays its producers about 175 billion yen (approx. $1 billion) every year.

Make a guess: How many different kinds of government policies are used to make the above-mentioned $4 billion in payments to American wheat farmers?

Over 20 different policies are used to pay American wheat farmers.

(Average amounts for 1982-86)

	Million $
Disaster payments	3
Deficiency payments	1,476
Diversion payments	335
Storage payments	190
PIK entitlements	470
Loan forfeit benefits	135
Price supports	155
Commodity loans	451
Farm storage facility	1
Farmers Home Administration	103
Crop insurance	65
Fuel excise tax	2

	Million $
Processing/marketing assistance	6
Transport	58
Inspection services	2
Research	45
Advisory	18
Pest/disease control	16
Land improvements	79
Taxation	83
State programs	120
Total	3,816

Two-thirds of the payments are made direct to the producer. The other payments are indirect -- that is, the government does not actually pay in cash, but the benefits to producers (as from research and extension) are nonetheless very real.

Indirect payments can also be made by consumers, because some government policies lead to higher food prices.

Take another guess: If each country has one complex set of rules for each agricultural commodity, and if there are about three dozen major commodities in each country, then about how many separate sets of country rules could be involved in the GATT negotiations on agriculture?

The world has several thousand sets of rules by which governments control agricultural policy.

1	Set of rules per country per crop
x36	Major crops and animal products
36	Sets of rules per country
x105	Countries
4,000	Sets of rules in the world, on agricultural trade, each with dozens of specific policies

Picture 4,000 teams of experts (there must be experts on each crop, or group of crops) trying to negotiate one set of uniform rules for the entire world to follow!

Governments generally agree that all the different rules result in a major distortion of world agricultural trade, which costs the entire world many, many tens of billions of dollars. Question: To negotiate freer world trade in 105 countries and dozens of crops and animal products, what would you do?

A. Make all government rules the same.

B. Find some other way.

An alternative to one and only one set of rules:

1. Suppose you could calculate from public record that:

   Country A subsidizes its agriculture 25%
   Country B subsidizes its agriculture 50%
   Country B subsidizes its agriculture 75%
   and so on.

2. Then you could consider an agreement on reducing this measure, perhaps eventually to zero -- or to 20% in 5 years,15% in 10 years, and so on.

3. To accomplish the reduction, each country would make any alteration of its own rules which may suit it, and which would follow GATT agreements already in place.

If a simple percentage could be calculated for how much each country subsidizes its agriculture, then the "apples and oranges" of world trade could be compared more fairly. It might become easier to negotiate reductions in the subsidies, and this could help lead to fair trade.

Economists have worked out a method for making the calculation mentioned above. The method works by comparing the "value of a crop to the producer" with the "value of transfers made to the crop by the government." Let's look at how this calculation can be made, beginning with "value to the producer."

Value to the producer of U.S. wheat.

	Dollars per bushel
Price paid by market	3.18
Direct payments by government:	
Disaster payments	.01
Deficiency payments	.60
Diversion payments	.14
Storage payments	.08
PIK entitlements	.19
Loan forfeit benefits	.05
Total direct payments	1.06
Value to the producer	4.24

Value to the producer is the sum of market value plus direct payments by the government.

The above figures are stated in dollars per bushel. The same figures can be given for the entire United States in millions of dollars, covering the entire wheat crop of 1.8 billion bushels (which is also 67 million tons). Let's switch to the language of world trade: "Millions of dollars" and "millions of tons."

Value to producers of U.S. wheat.

	Million dollars
Payments by the market	7,839
Direct payments by government:	
Disaster payments	3
Deficiency payments	1,476
Diversion payments	335
Storage payments	190
PIK entitlements	470
Loan forfeit benefits	135
Total direct payments	2,609
Value to the producer	10,448

Value to producers is $10.4 billion for the entire U.S. crop.

Value to producers, stated in millions or billions, is still the sum of market value plus direct payments by the government.

The value to producers is the money that farmers can actually see coming into their pockets. This quantity of money must now be compared with the total transfers made by government, both direct and indirect, because the indirect payments can help just as much to distort trade.

Value to producers and indirect government transfers to U.S. wheat.

Production	67	Million tons
Price paid by market	117	$ per ton
Revenue from market	7,839	Million $
Direct payments by government	2,609	Million $
Value to producers	10,448	Million $
Direct payments by government	2,609	Million $
Indirect payments by government and increased consumer payments	1,207	Million $
Total transfers due to government	3,816	Million $

Transfers must be compared to value, in order to obtain a figure which measures the degree of government subsidy of agriculture.

If we compare the $3.8 billion in total transfers due to government programs with the $10.4 billion in value to the producer, we can see that the government subsidy in wheat is 37 percent. This ratio is called the U.S. producer subsidy equivalent for wheat.

Producer subsidy equivalent of U.S. wheat.

Production	67	Million tons
Price paid by market	117	$ per ton
Revenue from market	7,839	Million $
Direct payments by government	2,609	Million $
Value to producer	10,448	Million $
Direct payments by government	2,609	Million $
Indirect payments by government and increased consumer payments	1,207	Million $
Total transfers due to government	3,816	Million $
Producer subsidy equivalent	37%	

Without the government, producers would lose the equivalent of 37 percent of their wheat crop's value.

The 37 percent above is the producer subsidy equivalent (PSE) of U.S. wheat for the average of the years 1982 through 1986. Let's take a look at all 5 of these years, because the PSE changes every year.

Producer subsidy equivalents of U.S. wheat, 1982-86.

	1982	1983	1984	1985	1986	Avg.	
Production	75	66	71	66	57	67	Million tons
Price paid by market	130	131	124	116	86	117	$ per ton
Revenue from market	9,750	8,646	8,804	7,656	4,902	7,839	Million $
Direct payments by government	792	3,297	2,059	2,493	4,331	2,609	Million $
Value to producer	10,542	11,943	10,863	10,149	9,233	10,448	Million $
Direct payments by government	792	3,297	2,059	2,493	4,331	2,609	Million $
Indirect payments by government and increased consumer payments	983	1,257	1,032	1,350	1,483	1,207	Million $
Total transfers due to government	1,775	4,554	3,091	3,843	5,814	3,816	Million $
Producer subsidy equivalents	17%	38%	28%	38%	63%	37%	

The government's degree of subsidization of U.S. wheat has changed every year. This is because policies are designed to respond to world supply-demand conditions, and because policies are often changed with a view to improving U.S. share of world wheat exports.

The table shows that PSE's help us see changes in government policy for a particular crop over time. Now let's take a look at how PSE's help us compare different crops and agricultural products ("apples and oranges").

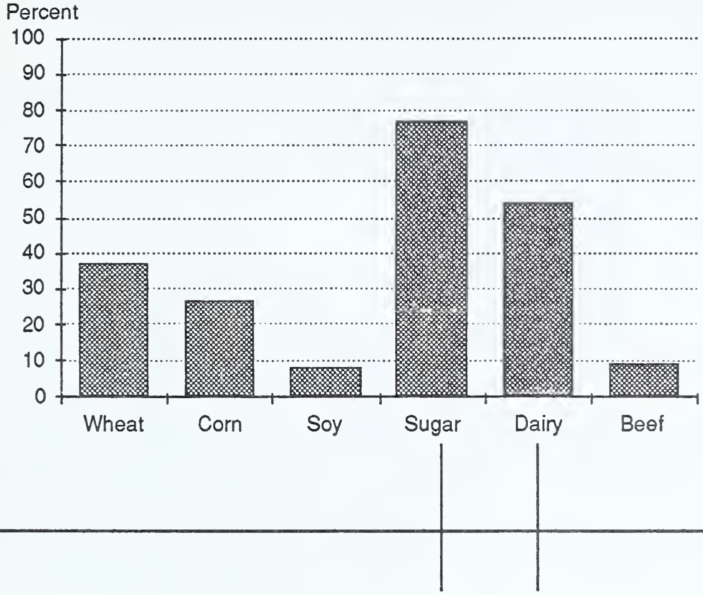
Producer subsidy equivalents of six U.S. agricultural products (average, 1982-86).

	Wheat	Corn	Soy	Sugar	Dairy	Beef	
Production	67	189	54	5	65	11	Million tons
Price paid by market	117	95	211	311	283	1,984	$ per ton
Revenue from market	7,839	17,921	11,365	1,556	18,371	21,819	Million $
Direct payments by government	2,609	4,093	9	126	-206	0	Million $
Value to producer	10,448	22,014	11,374	1,556	18,165	21,819	Million $
Direct payments by government	2,609	4,093	9	0	-206	0	Million $
Indirect payments by government	1,056	1,865	956	102	944	1,904	Million $
Increased consumer payments	155	0	0	1,102	9,059	0	
Total transfers due to government	3,816	5,958	965	1,204	9,797	1,904	Million $
Producer subsidy equivalents	37%	27%	8%	77%	54%	9%	

On average, the United States is a larger subsidizer of sugar and dairy than of wheat, corn, soybeans, and beef.

Because we have dozens of major crops and over 100 countries involved in the GATT negotiations, it is important to display PSE's in the form of comparative graphs, as shown on the next page.

Producer subsidy equivalents of six U.S. products (average, 1982-86).



On average, the United States is a larger subsidizer of sugar and dairy than of wheat, corn, soybeans, and beef.

We've seen how PSE's can be used to show the differences in how governments treat various agricultural products within a country, and how these policies change over the years. Now let's look at how PSE's help us compare one country with another.

Producer subsidy equivalents of wheat in three areas (average, 1982-86).

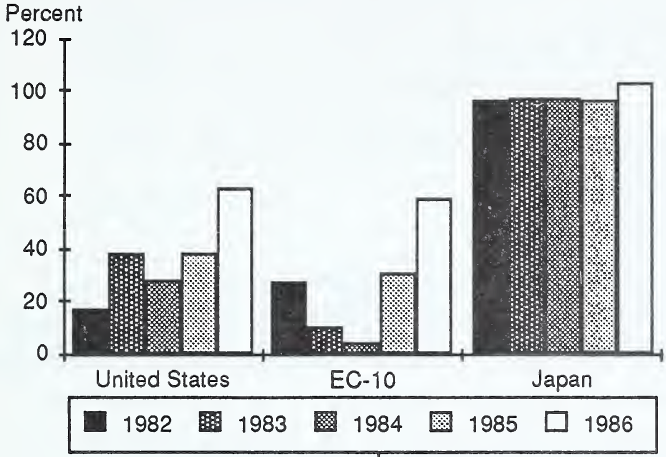
	U.S.		EC-10		Japan	
Production	67	Million tons	60	Million tons	1	Million tons
Price paid by market	117	$ per ton	185	Ecu per ton	184	Yen per kg
Revenue from market	7,839	Million $	11,126	Million ecu	145	Billion yen
Direct payments by government	2,609	Million $	0	Million ecu	34	Billion yen
Value to producer	10,448	Million $	11,126	Million ecu	179	Billion yen
Direct payments by government	2,609	Million $	0	Million ecu	34	Billion yen
Indirect payments by government	1,056	Million $	18	Million ecu	26	Billion yen
Increased consumer payments	155	Million $	2,767	Million ecu	115	Billion yen
Total transfers due to government	3,816	Million $	2,785	Million ecu	175	Billion yen
Producer subsidy equivalents	37%		25%		98%	

On average, Japan subsidizes wheat much more than does Europe or the United States.

Notice that this method simplifies the problem of exchange rates by stating the ratio of transfers to value as a pure percentage within each country, before comparisons are made.

We can chart the above relationships between countries, and we can also simultaneously show the comparison over time.

Producer subsidy equivalents of wheat in three areas (1982-86).



In wheat, the recent trend has been for both the United States and Europe to increase their subsidies while Japan has remained virtually unchanged.

The next step is to use the PSE method to lump together in one percentage number the level of support to all agricultural products.

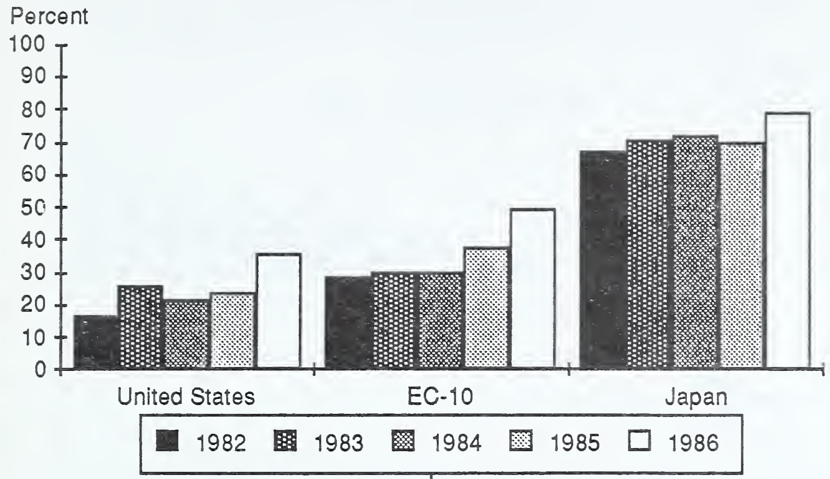
Producer subsidy equivalent of all U.S. agricultural products (average 1982-86).

Production	*	Million tons
Price paid by market	*	$ per ton
Revenue from market	100,678	Million $
Direct payments by government	7,832	Million $
Value to producer	108,510	Million $
Direct payments by government	7,832	Million $
Indirect payments by government	7,775	Million $
Increased consumer payments	11,135	Million $
Total transfers due to government	26,742	Million $
Producer subsidy equivalent	25%	

***** It does not make sense to show the tons and price of all agricultural products combined, but we can show the total dollars of revenue.*

Without the government, U.S. producers would lose the equivalent of 25 percent of the value of all agricultural products in the United States.

Make a guess: Which of the three areas we've looked at so far has the highest overall PSE for all agricultural products, and what's the trend?



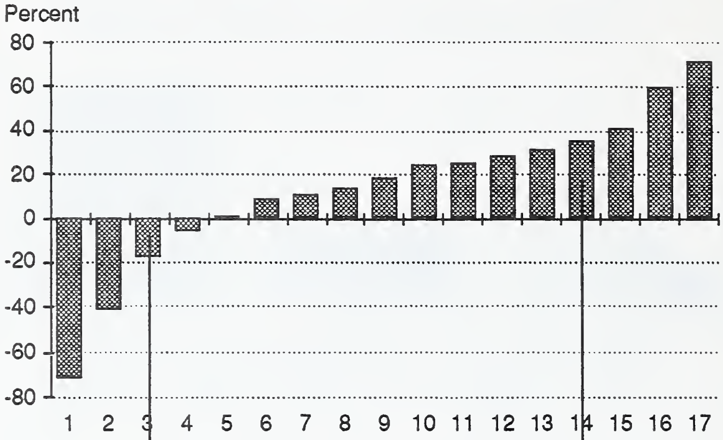
Producer subsidy equivalents for all agricultural products (1982-86).

Japan leads in overall PSE for all agricultural products, followed above by Europe and the United States. The trend in all three cases Is for governments to spend more on subsidies, not less. This Is happening despite the fact of large supplies of agricultural products, except when there's a regional drought.

Question: Who pays for producer subsidy equivalents?

Taxpayers, consumers and producers pay for PSE's, depending on the country.

Producer subsidy equivalents for all agricultural products for 17 countries (average 1982-86).



1	Pakistan
2	Nigeria
3	India
4	Argentina
5	Thailand
6	Brazil
7	Australia
8	Indonesia
9	Taiwan
10	United States
11	New Zealand
12	South Africa
13	Canada
14	Europe (EC-10)
15	Mexico
16	South Korea
17	Japan

A negative PSE means that the producer is giving up some amount. The government is directly or indirectly taxing the producer.

A positive PSE means that the taxpayer and/or consumer is paying the subsidy. The government is directly or indirectly taxing the taxpayer.

Question: What about the taxpayer as consumer? Does the consumer pay something, or benefit in some way, from agricultural subsidies?

Consumer subsidy equivalents (CSE's) measure the flip side of PSE's.

CSE for U.S. sugar.

Consumption	7	Million tons
Retail price in market	643	$ per ton
Cost to consumer	4,542	Million $
Increased consumer payments	-2,686	Million $
Consumer subsidy equivalent	-59%	

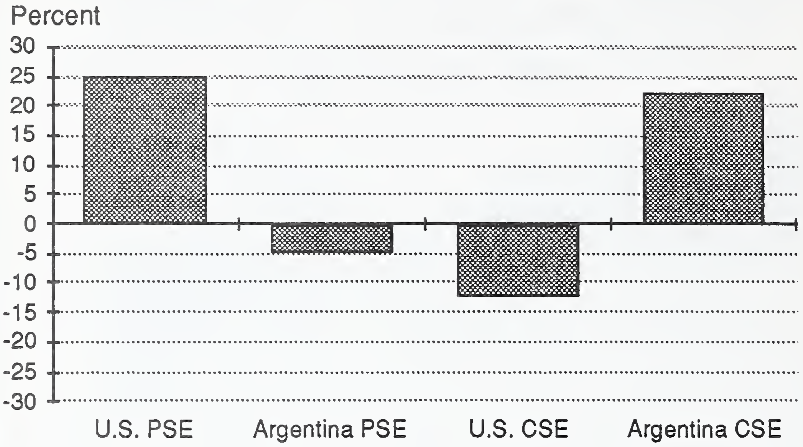
In the case of sugar, the government supports the domestic price and maintains quotas against imports, both of which have a negative effect on consumers.

The -59 percent CSE for sugar means: With the government, the consumer loses the equivalent of 59 percent of the retail price of sugar. In other words, without the government, price would fall by 59 percent.

Let's compare the agricultural policy approach of two exporting countries, using PSE's and CSE's. Will they necessarily be the same?

Different approaches are the rule.

PSE's and CSE's for all agricultural products for two major exporters.



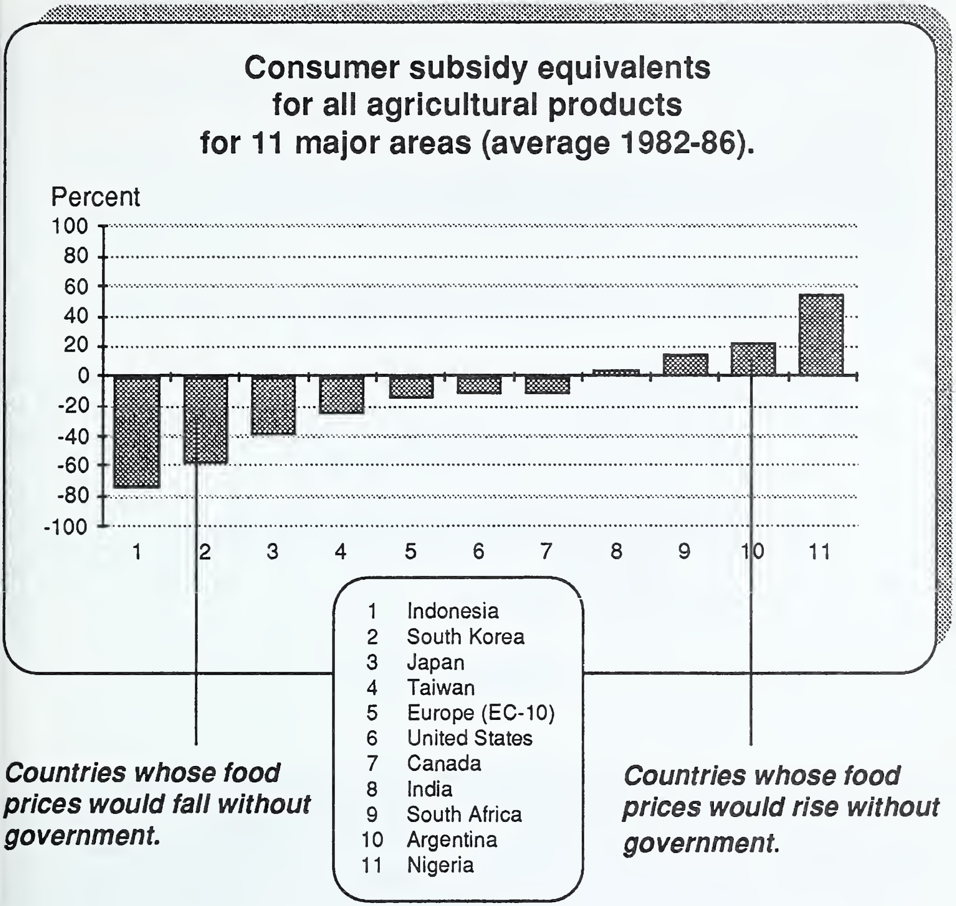
***Positive PSE** means: Without government, producers would lose the equivalent of 25 percent of the value of their products.*

***Negative PSE** means: Without the government, producers would gain the equivalent of 5 percent of the value of their products. (The government is taxing the producer.)*

***Negative CSE** means: Without government support, consumer prices would fall by about 12 percent.*

***Positive CSE** means: Without government, consumers would lose protection of prices to the equivalent of 22 percent (Without the government, prices would rise.)*

Take a guess: How do the major world countries compare on the CSE scale?



Consumer subsidy equivalents for all agricultural products for 11 major areas (average 1982-86).

Countries whose food prices would fall without government.

Countries whose food prices would rise without government.

The PSE and CSE calculations show that no nation is a "free trader." PSE's and CSE's clarify the relative impact of different policies in a country, and may be quite helpful in finding a basis to reduce costly distortions in world trade. Final question: How good are the calculations of PSE and CSE? Are they all we need to negotiate world trade?

The PSE/CSE method does not answer all questions.

1. PSE's do not estimate what farm income would be if government programs were simultaneously removed in many countries.

2. PSE's do not directly reveal the effects of government policies on production, consumption, trade, or prices.

(Two countries could have the same PSE's but have different effects on world markets.)

3. World market effects of policies depend on:
    - the mix of policy tools
    - producer and consumer response to government programs
    - the country's trade share.

Governments use a variety of policies to achieve their agricultural goals. Many policies are, in effect, subsidies or taxes on producers or consumers. Regardless of the form of these policy interventions, they nearly always have some distorting effect on trade among nations. Aggregate measures of support, such as the producer subsidy equivalent and the consumer subsidy equivalent, may help negotiators of a new GATT attain common ground for reducing barriers to international trade.

If you want further information on GATT and the current round of negotiations, see the reports listed on the next page.

For further information:

Contact Carl Mabbs-Zeno (202-786-1680) or Alan Webb (202-786-1636), Agricultural and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture, Washington, DC 20005-4788

Or check these two ERS reports:

Estimates of Producer and Consumer Subsidy Equivalents: Government Intervention in Agriculture, 1982-86 (Staff Report No. AGES880127) ($6.95 microfiche; $21.95 paper).

Agriculture in the Uruguay Round: Analysis of Government Support (Staff Report No. AGES880802) ($6.95 microfiche; $21.95 paper).

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Also see, *Subsidy Equivalents: Yardsticks of Government Intervention in Agriculture from the GATT*. Carl Mabbs-Zeno and Arthur Dommen. AIB-558. $3.00 domestic; $3.75 foreign. Order from ERS-NASS Reports, P.O. Box 1608, Rockville, MD 20850. Or, call toll free 1-800-999-6779 (8:30 - 5:00 ET). Mail orders: Check or money orders payable to ERS-NASS. Phone orders: VISA, MasterCard.

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UNITED STATES DEPARTMENT OF AGRICULTURE
ECONOMIC RESEARCH SERVICE
1301 NEW YORK AVENUE, NW.
WASHINGTON, DC 20005-4788